

WHAT IS CLAIMED IS:

1. A device adapted for deployment in a body vessel, comprising:
  - a filter having a plurality of openings for fluid flow therethrough; and
  - a proximally-tapered collapsible frame coupled to the filter and operably coupled to a guidewire, said frame including an expandable mouth coupled to the filter and adapted to operate between an expanded profile and a collapsed profile, and longitudinal ribs having opposed first and second ends, said first ends being coupled to the guidewire, and said second ends being coupled to the mouth, said ribs being sloped outwardly in an expanded position to form the proximally tapered collapsible frame.
2. The device of claim 1 wherein the mouth is normally biased in the expanded profile.
3. The device of claim 2 wherein the mouth is formed of a resilient wire material.
4. The device of claim 1 wherein the mouth and ribs are integrally formed from a mesh sheet material.
5. The device of claim 1 wherein the filter has a distal end fixedly coupled to the guidewire.
6. The device of claim 1 wherein the filter is generally cone-shaped.

7. The device of claim 1 wherein mouth is formed of a pleated ring.

8. The device of claim 1 wherein ribs are fixedly secured to the guidewire.

9. The device of claim 1 and further comprising a collar slidably disposed over the guidewire and wherein the ribs are coupled to the collar, the guidewire extending through the mouth and along a length of the filter.

10. The device of claim 1 wherein the frame includes at least four ribs.

11. The device of claim 7 wherein the pleated ring includes at least four folds.

12. The device of claim 1 wherein the mouth and ribs are integrally formed.

13. In combination:

a device adapted for deployment in a body vessel including:

a filter having a plurality of openings for fluid flow therethrough, said filter being adapted to be coupled to a wire for operation;

a proximally-tapered collapsible frame coupled to the filter and operably coupled to the core wire, said frame including an expandable mouth adapted to operate between an expanded profile and a collapsed

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profile, and sloped longitudinal ribs having opposed first and second ends, said first ends being coupled to the wire and said second ends being coupled to the mouth, said ribs being sloped outwardly in the expanded profile to form the proximally-tapered collapsible frame; and

a sheath formed of a tubular member sized for placement over the ribs to collapse the mouth and filter to the collapsed profile.

14. A method for deploying a device in a vessel for collecting debris, comprising the steps of:

providing a device coupled to a guidewire and movable relative thereto, having a filter and a frame for supporting the filter in a collapsed profile and an expanded deployed profile, said frame being normally biased in the expanded deployed profile;

providing an elongated sheath having proximal and distal ends and an inner lumen extending therethrough;

positioning the device in the lumen of the sheath to maintain the device in a collapsed profile;

inserting the sheath and device into a body lumen and advancing the distal end of the sheath to locate the device at a deployment site; and

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proximally moving the sheath to withdraw the sheath while maintaining the position of the guidewire to remove the sheath from the device to expand the frame and filter.

15. The method of claim 14 wherein the guidewire is concurrently inserted with the device and sheath.

16. The method of claim 14 wherein the guidewire is inserted prior to insertion of the device, and the device is advanced over the guidewire for placement at the deployment site and is locked to the guidewire prior to withdrawal of the sheath.

17. A method for removing a deployed device, deployed in an expanded operating profile for collecting debris from a vessel, comprising the steps of:

providing the device with a proximally tapered collapsible frame for supporting a filter, said proximally tapered frame including a plurality of longitudinally sloped ribs extending radially outwardly in a deployed profile;

providing an elongated sheath having proximal and distal ends and an inner lumen extending therethrough;

inserting the elongated sheath to align the distal end thereof with the longitudinally sloped ribs of the deployed device;

longitudinally sloped ribs of the deployed device;  
positioning the sheath over the longitudinally sloped ribs to collapse the device; and  
proximally withdrawing the sheath and device.

~~18~~ 19. The method of claim 18 wherein the device is fixedly coupled to a guidewire, and wherein positioning the sheath comprises:

proximally withdrawing the guidewire to collapse the device within the sheath.

~~19~~ 20. The method of claim 18 wherein positioning the sheath comprises:

advancing the sheath over the sloped ribs to collapse the device.

~~20~~ 21. The method of claim 18 and further comprising: positioning at least a proximal mouth of the device within the sheath prior to withdrawing the sheath and device.

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